OXC - 2944
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12 January 1962

MEMORANDUM FOR THE RECORD

25X1A

SUBJECT : Further Considerations On Runway Barrier [redacted]

1. Reference memorandum OXC-2948, dated 27 December 1961, subject: Runway Barrier [redacted] 25X1A

25X1A 2. This memorandum is to update the above reference as a result of discussions with [redacted] and further computations. 25X1A [redacted] reported that Lockheed plans in event of engine failure during takeoff are now generally as follows: in summer, [redacted] 25X1 25X1 [redacted] for rollout; in winter, continue takeoff on one engine, dump fuel, and land. Lockheed now also feels that a barrier on the overrun 25X1A will be of little value but are thinking of a chain barrier somewhere 25X1 [redacted] according to [redacted]. My comments follow.

3. The proposal to continue takeoff in winter months when excess thrust will provide an adequate single engine climb is feasible if, (1) flying speed has been attained, and (2) all other systems continue to function properly. This does not cover the situation where flying speed has almost been attained and braking is inadequate to stop the vehicle on the runway. In view of these considerations, plus the possibility of failure of the other engine or systems which would compound the existing emergency, this procedure is considered inadequate.

4. In the case of a summertime emergency, [redacted] 25X1 is quite feasible, provided the ground is dry and smooth, tires do not blowout and brakes and nosewheel steering remain operable. To accomplish this, the aircraft should roll straight after leaving the runway, following the runway heading, for 8000 feet, then start a smooth right turn of 9000 feet radius for 8000 feet, then tighten the turn to 5000 feet radius for 6000 feet. Such a procedure will permit the first turn to be begun at a maximum speed of 154 knots TAS and the second turn to be started at 114 knots TAS, at a TOW of 120,000 pounds. [redacted] 25X1 is available following these turns; the conditions stated are the most critical. These figures are based on the runway orientation, [redacted] and allowable main gear sideloads. Aerodynamic and wheel braking should be adequate to achieve these reduced speeds over the distances stated. If this

25X1 [redacted] 25X1

procedure is considered for use it is recommended that [redacted] and the path smoothed. The Lockheed proposed chain barrier is unnecessary for this procedure.

5. The methods described in paragraph 5 of the referenced memorandum are still considered the most reliable way of stopping the OXCART vehicle with least damage on a year-round, all-weather basis. In further amplification of the systems described, the energy absorber would have to be installed in multiples at spaced intervals; absorbing the vehicle energy over an extended rollout distance so as to avoid aircraft damage. An adjustable, known force is a feature of the BAK-9 which makes this system possible. If a tail hook cannot be used, than a main gear engagement using the best available engaging devices can accomplish arrestment safely. Lockheed is proposing to come up with an engaging device; if they can come up with one that is more reliable than present systems then we should by all means use it.

SIGNED

[redacted]
Lt.Colonel USAF

25X1

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9 January 1962

MEMORANDUM FOR THE RECORD

SUBJECT : X-15 Experience With Atmospheric Turbulence At High Altitudes

A telephone call to NASA Flight Research Center at Edwards AFB, California, to investigate X-15 experience with upper atmospheric turbulence revealed that none has been encountered to date. Pilot's reports are to the effect that the upper atmosphere is "smooth as glass." Accelerometers about the three primary axes are set for a sensitivity of .05 g; no discernible gusts have been noted above the vehicle vibration level. Discussion was with the Director, [redacted]

25X1A

25X1A [redacted]

25X1A

[redacted]
Lt.Colonel USAF

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2 January 1962

MEMORANDUM FOR THE RECORD

SUBJECT : Qualification Tests - OXCART

It is suggested that the nature and extent of aircraft sub-systems qualification testing planned and accomplished should be given a thorough technical review to assure, to the maximum extent possible, adequacy of all equipment over the range of operational usage, plus a safety factor. This review should be accomplished before first flight of the equipment, by a technical manager (possibly LAC), and should include review of LAC as well as other suppliers. Such a review should tend to not only assure adequacy, but that there are no omissions of equipment or tests.

25X1A

[redacted]

Lt. Colonel USAF

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